

**Notice of Allowability**

Application No.

09/740,419

Examiner

Daniel Pan

Applicant(s)

SEZNEC ET AL.

Art Unit

2183

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 08/25/06.
2. ☒ The allowed claim(s) is/are 1-4,6-14 and 17-23.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

DANIEL H. PAN  
SENIOR EXAMINER  
GROUP

Reasons for Allowance/ Examiner's Amendment

None of the prior art of record teaches the combined features of each of the following :

- a) the processor having the branch predictor including the multi-bank prediction array used for predictions for conditional branch instructions, each single ported bank, the bank control logic unit coupled to the prediction array to ensure two accesses to the prediction array in the same cycle do not conflict, the determination of bank identifier for the conditional branch instruction that is different than the bank identifier determined for the conditional branch instruction that was last used to access the prediction array (claim 1). The practical application is found by physical transformation of the input device coupled to the processor and the branch predictor array of the multibank, each single ported (see page 19, 101 Interim Guidelines);
- b) the multi-bank prediction array used to predict conditional branch instructions, each of the banks comprising a single ported memory device, the bank control logic unit to ensure two branch prediction accesses to the prediction array in the same cycle do not conflict, the branch predictor determined the index value based on the conditional branch instruction and uses the index value to retrieve the prediction from the prediction array, each bank has an identifier and the bank identifier for the conditional branch instruction different than the bank identifier determined for the conditional branch

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instruction that was last used to access the prediction array . The practical application is found by physical transformation of the branch control logic unit coupled to the prediction array and the single ported bank memory device.

c) generation of the index value from the conditional branch instruction address, selection of the two bits from the index value, comparison of the two bits to the previous bank number determined for the conditional branch instruction previously used to access the multi-bank prediction array, using the two bits as current bank number of the differing bits, the change of the two bits to be the current bank number of the corresponding bank of the multi-bank prediction array if the two bits equals the previous bank number, and using the current bank number to access the corresponding bank in the multi-bank prediction array to retrieve the prediction (claim 22). The practical application is the method to avoid the bank conflicts in a multi-bank prediction array and the use of the current bank number to access the corresponding bank in the multi-bank prediction array to retrieve the prediction.

The following is Examiner's Amendment :

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Philip Lyren on 08/29/06. Claims 5,15,16 have been canceled in the response on 08/25/06, and it has been entered.

In the claims :

- a) claim 1, line 8, after "bank control logic", insert --unit-- ;
- b) claim 1, line 10, after "bank control logic", insert --unit--;
- c) claim 2, line 2, after "fetch logic", insert --unit--;
- d) claim 3, line 3, "bank control logic", insert --unit--;
- e) claim 6, line 1, after "bank control logic", insert --unit-- ;
- f) claim 7, line 1, after "bank control logic", insert --unit-- ;
- g) claim 8, line 3, after "bank control logic", insert --unit-- ;
- h) claim 9, line 1, after "bank control logic", insert --unit-- ;
- i) claim 10, line 3, after "bank control logic", insert --unit-- ;

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- j) claim 11, line 2, after "fetch logic", insert --unit-- ;
- k) claim 12, line 4, after "bank control logic", insert --unit-- ;
- l) claim 12, line 8, after "bank control logic", insert --unit-- ;
- m) claim 13, line 2, after "fetch logic", insert --unit--;
- n) claim 14, line 3, after "bank control logic", insert --unit-- ;
- o) claim 17, line 1, after "bank control logic", insert --unit-- ;
- p) claim 18, line 1, after "bank control logic", insert --unit-- ;
- q) claim 19, line 3, after "bank control logic", insert --unit-- ;
- r) claim 20, line 1, after "bank control logic", insert --unit-- ;
  
- s) claim 21, line 3, after "bank control logic", insert --unit-- ;
- t) claim 22, line 6, after "previously used to", delete "a";
- u) claim 22, line 6, after "said", insert --multi-bank--;
- v) claim 22, line 10, after "the current bank number", insert --corresponding to  
a bank of said multi-bank prediction array--;
- w) claim 22, line 11, after "the corresponding bank in said", insert --multi-  
bank--.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Pan whose telephone number is 571 272 4172.

The examiner can normally be reached on M-F from 8:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chan, can be reached on 571 272 4162. The fax phone number for the organization where this application or proceeding is assigned is 703 306 5404.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

***21 Century Strategic Plan***

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